

What is claimed is:

1. An ergonomic device actuator comprising:

a housing;

*disclosure limited to
seat or furniture*

10 a nut disposed to rotate within said housing, said nut having right handed threads at a first end of said nut and said nut having left handed threads at a second end of said nut;

a first lead screw having right handed threads disposed to translate in a first direction within said nut and being extendingly engaged with said first end of said nut;

a second lead screw having left handed threads disposed to translate in a second direction within said nut and being extendingly engaged with said second end of said nut;

a seat in one of said first or second lead screws adapted to anchor a tension cable wire end axially with said first and second lead screws; and

a collar on the other of said first or second lead screws adapted to anchor a tension cable sleeve end axially with said first and second lead screws;

whereby rotation of said nut drives said first lead screw and said second lead screw apart, tensioning the tension cable by urging the tension cable wire end apart from the tension cable sleeve end.

2. The actuator of claim 1 wherein said first lead screw telescopes into said second lead screw.

3. The actuator of claim 1 wherein said second lead screw telescopes into said first lead screw.

4. The actuator of claim 1 wherein one of said first or second lead screws telescopes into the other of said first or second lead screws with a threaded engagement.

5. The actuator of claim 1 wherein the tension cable is a Bowden cable.

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- 5 6. The actuator of claim 1 wherein said second lead screw includes an installation slot adapted to accept installation of a Bowden cable end bullet.
7. The actuator of claim 1 wherein said housing, said nut, said first lead screw and said second lead screw are polyurethane.
8. The actuator of claim 1 wherein the coefficient of friction between said threads on said nut and said threads on said first lead screw and between said threads on said nut and said threads on said second lead screw is in the range from about 0.08 to about .014.
- 10 9. The actuator of claim 1 wherein further comprising a second seat for a second Bowden cable wire end and a second anchor for a second Bowden cable sleeve.
10. The actuator claim 1 wherein one rotation of said nut corresponds to 10 mm of Bowden cable wire travel relative to the Bowden cable sleeve.
11. The actuator of claim 1 wherein the pitch of said right handed threads and the pitch of said left handed threads is in a range from about 2.0 to about 3.0.
12. The actuator of claim 1 wherein the pitch of said right handed threads and the pitch of said left handed threads is in a range from about 4.0 to about 6.0.
- 20 13. The actuator of claim 1 wherein one of said first or second lead screws has a shaft that inserts into the other of said first or second lead screws.
14. The actuator of claim 1 wherein said shaft has ridges that prevent rotation of said lead screws.
15. The actuator of claim 1 wherein said seat adapted to anchor said tension cable wire end is on said shaft.
- 25 16. The actuator of claim 1 wherein said first lead screw, said second lead screw and said nut are double threaded.

5 17. An ergonomic device for a seat comprising:

a support surface that translates between a first, non-supporting position and a second supporting position;

10 a guide that mediates the travel of said support surface between said first non-supporting position and said second supporting position

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15 a tension cable comprising a wire disposed to slide axially through a sleeve, said wire having a first end and a second end and said sleeve having a first end and a second end and said first end of said wire and said first end of said sleeve being operatively engaged with said pressure surface and said guide;

an actuator housing adapted to mount on a seat frame;

a nut disposed to rotate within said housing, said nut having right handed threads at a first end and having left handed threads at a second end;

a first lead screw having right handed threads disposed to rotate within said nut and being extendedly engaged with said first end of said nut;

a second lead screw having left handed threads also disposed to rotate within said split nut and being extendedly engaged with said second end of said split nut;

30 an anchor in one of said first or second lead screws securing said second end of said wire of said tension cable axially with said first and second lead screws; and

an anchor in one of said first or second lead screws securing said second end of said sleeve of said tension cable axially with said first and second lead screws;

35 whereby rotation of said nut drives said first lead screw and said second lead screw apart, sliding said wire of said tension cable axially through said sleeve of said tension cable thereby selectively mediating travel of said pressure surface between said first non-supporting position and said second supporting position.

40 18. The actuator of claim 17 wherein said first lead screw telescopes into said second lead screw.

19. The actuator of claim 17 wherein said second lead screw telescopes into said first lead screw.

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- 5 20. The actuator of claim 17 wherein one of said first or second lead screws telescopes into the other of said first or second lead screws with a threaded engagement.
21. The actuator of claim 17 wherein the tension cable is a Bowden cable.
22. The actuator of claim 17 wherein said second lead screw includes an installation slot adapted to accept installation of a Bowden cable end bullet.
- 10 23. The actuator of claim 17 wherein said housing, said nut, said first lead screw and said second lead screw are polyurethane.
24. The actuator of claim 17 wherein one of said first or said second lead screws has a shaft that inserts into the other of said first or said second lead screws.
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25. A method of producing a tension cable actuator comprising;
- cutting in a first lead screw a seat adapted to anchor a tension cable wire end;
- cutting in a second lead screw a seat adapted to anchor a tension cable sleeve end;
- threading said first lead screw in a first direction;
- threading said second lead screw in a second direction opposite to said first direction of said threading of said first lead screw;
- 25 inserting each of said lead screws in a nut, said nut having a first end threaded to engage said first lead screw and having a second end threaded to engage said second lead screw; and
- 30 housing said nut such that turning said nut drives said first lead screw and second lead screw apart.
26. The method of claim 25 further comprising the step of splitting said nut.
27. The method of claim 25 further comprising the step of dimensioning said first and
- 35 second lead screws such that one of said first or second lead screws telescopes into the other of said first or second lead screws.
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5 28. The method of claim 25 further comprising the step of cutting at least one tension cable wire insertion slot in said housing.

29. A method of attaching a tension cable actuator to an ergonomic support comprising;

10 anchoring a tension cable wire end co-axially to a first lead screw, said first lead screw being threaded into engagement with a first end of a nut in a first direction, said nut being seated in a housing; and

anchoring a tension cable sleeve end co-axially to a second lead screw, said second lead screw being threaded into engagement with a second end of said nut in a second direction.

30. The method of claim 29 further comprising the step of:

mounting said housing on a seat frame.

31. A method of assembling a tension cable actuator comprising:

inserting a shaft of a first lead screw into a second lead screw;

laying said first and second lead screws onto a first half of a split nut such that threads on said lead screws engage threads on said split nut;

enclosing said first lead screw and said second lead screw with a second half of said split nut; and

installing said assembled first and second halves of said split nut in a housing.

32. The method of claim 31 wherein said inserting step telescopes one of said first or second lead screws into the other of said first or second lead screws.

33. The method of claim 31 further comprising:

anchoring a tension cable wire end to one of said first or second lead screws; and

anchoring a tension cable sleeve end to the other of said first or second lead screws.

34. The method of claim 31 further comprising mounting said housing on a seat frame.